

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A method of determining the service metal temperature of a γ/γ' MCrAlY-coated component ~~applied to a component~~ after use of the component in a high temperature environment, where the γ/γ' -MCrAlY-coating of the component exhibits a non-equilibrium γ/γ' -microstructure at a temperature lower than the temperature during operation and the depletion of chromium from the γ/γ' -MCrAlY-coating still allows the α -Cr phase to form, the method comprising:

- (a) measuring qualitatively impedance curves or measuring the coating electrical conductivity and magnetic permeability of the non-equilibrium MCrAlY-coating of the component in the post-service condition at different locations of the component by means of a multi-frequency eddy current system;
- (b) then subjecting the coated component to a heat treatment to transform the non-equilibrium MCrAlY coating into an equilibrium microstructure of the coating;
- (c) then measuring qualitatively impedance curves or measuring the coating electrical conductivity and magnetic permeability of the equilibrium MCrAlY-coating at different locations of the component by means of a multi-frequency eddy current system; and
- (d) determining the exposure temperature of the different locations of the component based on the difference in the measured qualitatively impedance curves

or the measured conductivities and permeabilities, before and after the heat treatment according to (b).

2. (Previously Presented) The method according to claim 1, wherein the coating consists of (wt.-%) 25% Cr, 5.5% Al, 1% Ta, 2.6% Si, 0.5%Y, rest Ni and unavoidable impurities.

3. (Previously Presented) The method according to claim 1, which comprises determining the service metal temperature of a gas turbine blade.

4. (Previously Presented) The method according to claim 2, which comprises determining the service metal temperature of a gas turbine blade.

5. (Currently Amended) The method according to claim 1, wherein:

(a) comprises measuring qualitatively impedance curves of the non-equilibrium MCrAlY-coating of the component in the post-service condition at the different locations of the component;

(c) comprises measuring qualitatively impedance curves of the equilibrium MCrAlY-coating at the different locations of the component; and

(d) comprises determining the exposure temperature of the different locations of the component based on the difference in the measured qualitatively impedance curves, before and after the heat treatment according to (b).

6. (Previously Presented) The method according to claim 5, wherein the coating consists of (wt.-%) 25% Cr, 5.5% Al, 1% Ta, 2.6% Si, 0.5%Y, rest Ni and unavoidable impurities.

7. (Previously Presented) The method according to claim 6, which comprises determining the service metal temperature of a gas turbine blade.

8. (Previously Presented) The method according to claim 5, which comprises determining the service metal temperature of a gas turbine blade.

9. (Previously Presented) The method according to claim 1, wherein:

(a) comprises measuring the coating electrical conductivity and magnetic permeability of the non-equilibrium MCrAlY-coating of the component in the post-service condition at the different locations of the component;

(c) comprises measuring the coating electrical conductivity and magnetic permeability of the equilibrium MCrAlY-coating at the different locations of the component; and

(d) comprises determining the exposure temperature of the different locations of the component based on the difference in the measured conductivities and permeabilities, before and after the heat treatment according to (b).

10. (Previously Presented) The method according to claim 9, wherein the coating consists of (wt.-%) 25% Cr, 5.5% Al, 1% Ta, 2.6% Si, 0.5%Y, rest Ni and unavoidable impurities.

11. (Previously Presented) The method according to claim 10, which comprises determining the service metal temperature of a gas turbine blade.

12. (Previously Presented) The method according to claim 9, which comprises determining the service metal temperature of a gas turbine blade.